

Claims

What is claimed is:

1. A vehicle door lift conversion kit device for vertically opening a vehicle door
5 adaptable to fit a multiplicity of different vehicles, the device comprising:
 - a fixed chassis plate having a pair of adapter plates removably secured thereto, the fixed chassis plate adapted to be installed on a multiplicity of different vehicle types on a vehicle body by attaching to the fixed chassis plate any of a variety of different pairs of adapter plates configured to secure to a door hinge receiving portion on any of a
10 multiplicity of different vehicle types;
 - a double axis connector attached to the fixed chassis plate by a horizontal pivoting means adapted to allow a vehicle door attached to the device to pivot horizontally open and closed and the double axis connector further comprising a vertical pivot linear bearing;
 - 15 a limit means for limiting a horizontal distance that the door may open so that the device is adapted to limit the door to open only a sufficient horizontal distance so that the door is positioned outside of an edge of a roofline of a vehicle above a door opening served by the device;
 - a door attaching arm pivotally attached to the double axis connector by the vertical
20 pivot linear bearing, the door attaching arm having a preformed vehicle specific adapter arm with two elongated door brackets adapted to attach to a vehicle door, the door attaching arm adapted to fit any of a multiplicity of different vehicle doors on different

vehicle types by attaching to the attaching bracket any of a variety of adapter arms with elongated door brackets configured to fit doors on different vehicle types;

a door lift assisting actuator attached by a first pivot means at one end of the actuator attached to the fixed chassis plate and by a second pivot means at the other end of the actuator attached to the door attaching arm, the actuator acting between the fixed chassis plate and the door attaching arm to assist in vertically lifting the door for smooth easy action in opening and closing the door vertically, the door lift assisting actuator having a means to adjust the amount of lift of the door, and a mechanical limit means to limit the height of lift of the door adapted to act between the door attaching arm and the fixed chassis plate;

a safety lock means for maintaining the door in an up position, the safety lock means removably securable between the fixed chassis plate and the door attaching arm to maintain the door in the up position in case the door lift assisting actuator should fail.

2. The device of claim 1 wherein the pair of adapter plates are removably secured to the fixed chassis plate by a series of bolts.

3. The device of claim 1 wherein the pair of adapter plates are removably secured to the fixed chassis plate by a series of welds.

4. The device of claim 1 wherein the pair of adapter plates are removably secured to the fixed chassis plate by a series of clamps.

5. The device of claim 1 wherein the vehicle specific adapter arm and the two elongated door brackets are removably secured to the door attaching arm by a series of bolts.

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6. The device of claim 1 wherein the vehicle specific adapter arm and the two elongated door brackets are removably secured to the door attaching arm by a series of welds.

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7. The device of claim 1 wherein the vehicle specific adapter arm and the two elongated door brackets are removably secured to the door attaching arm by a series of clamps.

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8. The device of claim 1 wherein the limit means for limiting a horizontal distance that a vehicle door may open comprises a stop element to stop the rotation of the door at a selected distance sufficient to position the door outside of an edge of a roofline of a vehicle above a door opening served by the device.

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9. The device of claim 8 wherein the means for limiting the horizontal distance comprises a setscrew protruding between the double axis connector and the fixed chassis plate.

10. The device of claim 1 wherein the safety lock means for maintaining the door in an up position comprises a rigid key securable between openings in the fixed chassis plate and the door attaching arm.

5 11. The device of claim 1 wherein the safety lock means for maintaining the door in an up position comprises a rigid bolt securable between openings in the fixed chassis plate and the door attaching arm.

10 12. The device of claim 1 wherein the door lift assisting actuator comprises a gas charged spring.

13. The device of claim 12 wherein the means to adjust the amount of lift of the door comprises a means to regulate the amount of pressure in the gas charged spring to adapt the device to a particular vehicle.

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14. The device of claim 1 wherein the door lift assisting actuator comprises an electric linear actuator.

15. The device of claim 1 wherein the door lift assisting actuator comprises a lift

20 spring apparatus

16. The device of claim 1 further comprises an adjustable low limit means to limit downward movement of a vehicle door, the low limit means adapted to act between the door attaching arm and the fixed chassis plate to stop the movement therebetween.

5 17. The device of claim 16 wherein the low limit means comprises a block mounted on the door attaching arm and a setscrew protruding from the block an adjustable length between the block and the fixed chassis plate.

18. The device of claim 1 wherein the mechanical limit means to limit the height of
10 lift comprises an adjustable screw and block means to act between the fixed chassis plate and the door attaching arm.

19. The device of claim 18 wherein the block means is mounted on the fixed chassis plate and the adjustable screw means comprises a setscrew protruding from the block
15 means an adjustable distance between the lock means and the door attaching arm.